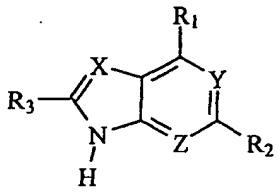
CLAIMS

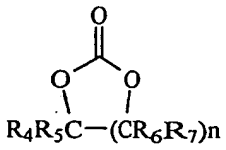
What is claimed is:

1. A method of preparing a compound according to Structure 3 comprising:

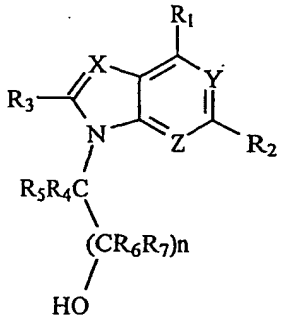
reacting a heterocyclic base according to Structure 1 with a compound according to Structure 2 in dimethylacetamide to form a product according to Structure 3;



Structure 1



Structure 2



Structure 3;

wherein X, Y and Z are independently N or CR, with R being H, halogen, OH, NH_2, or substituted or unsubstituted alkyl, alkenyl, alkynyl, aryl, or alkaryl;

wherein R_1, R_2, R_3, R_4, R_5, R_6, and R_7 are independently H, halogen, OH, NH_2, $CO(NH_2)$, $CNH(NH_2)$, N_3, or substituted or unsubstituted alkyl, alkenyl, alkynyl, aryl, or alkaryl;

wherein n is an integer between 1 and 3; and

isolating Structure 3 from the dimethylacetamide solvent using isopropanol or tert-butylmethylether.

2. The method of claim 1 wherein X, Y and Z are N, and wherein R_1 is NH_2, R_2 and R_3 are H.

3. The method of claim 1 wherein R_4, R_5, R_6, and R_7 are H, and wherein n is 1.

4. The method of claim 1 wherein Structure 3 is isolated from the dimethylacetamide solvent using isopropanol.

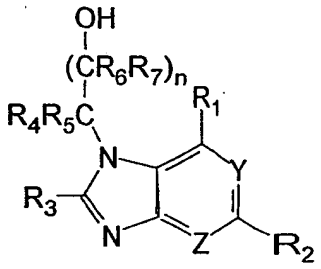
5. The method of claim 1 wherein the step of reacting includes heating of the heterocyclic base according to Structure 1 and the compound according to Structure 2 to a temperature of no less than 150 centigrade.

6. The method of claim 1 wherein the step of reacting includes heating of the heterocyclic base according to Structure 1 and the compound according to Structure 2 to a temperature of no less than 160 centigrade.

7. The method of claim 1 wherein the step of reacting is performed in the presence of a basic catalyst.

8. The method of claim 7 wherein the basic catalyst is NaOH.

9. The method of claim 1 wherein X is N, and wherein the step of reacting the heterocyclic base according to Structure 1 with the compound according to Structure 2 further leads to an N7-alkylated byproduct according to Structure 4



Structure 4.

10. The method of claim 9 wherein the step of reacting the heterocyclic base with the compound gives a total yield of the product and the N7-alkylated byproduct of at least 82%, and wherein about 98% of the total yield is the product and wherein about 1% of the total yield is the N7-alkylated byproduct.

11. The method of claim 9 wherein the step of reacting the heterocyclic base with the compound gives a total yield of the product and the N7-alkylated byproduct of at least 87%, and wherein about 97% of the total yield is the product and wherein about 1.1% of the total yield is the N7-alkylated byproduct.

12. The method of claim 9 wherein the step of reacting the heterocyclic base with the compound gives a total yield of the product and the N7-alkylated byproduct of at

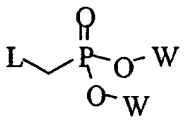
least 91%, and wherein about 97% of the total yield is the product and wherein about 1.3% of the total yield is the N7-alkylated byproduct.

13. The method of claim 1 wherein the heterocyclic base is present in the dimethylacetamide at a concentration of up to 220mM.

14. The method of claim 1 wherein the heterocyclic base is present in the dimethylacetamide at a concentration of up to 270mM.

15. The method of claim 1 further comprising reacting the product according to Structure 3 with a phosphonate.

16. The method of claim 15 wherein the phosphonate has a structure according to Structure 5



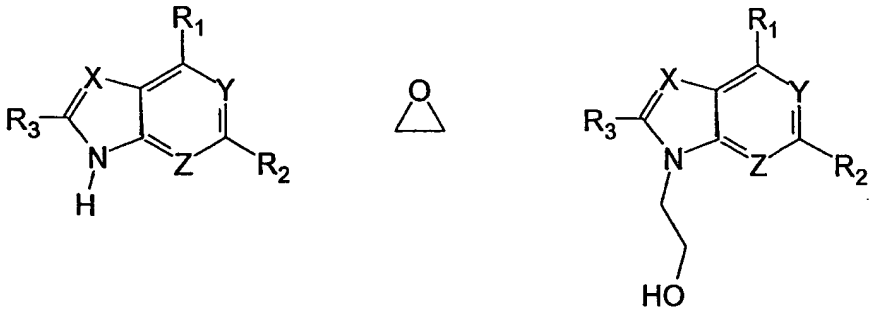
Structure 5

wherein L is a leaving group, and wherein W is a protecting group of the oxygen.

17. The method of claim 16 wherein L is a tosyl group and wherein W is ethyl group.

18. A method of preparing a compound according to Structure 3 comprising:

reacting a heterocyclic base according to Structure 1 in a solvent with ethylene oxide to form a product according to Structure 3;



Structure 1 Structure 3

wherein X, Y and Z are independently N or CR, with R being H, halogen, OH, NH_2, or substituted or unsubstituted alkyl, alkenyl, alkynyl, aryl, or alkaryl; and

wherein R_1, R_2, and R_3 are independently H, halogen, OH, NH_2, $CO(NH_2)$, $CNH(NH_2)$, N_3, or substituted or unsubstituted alkyl, alkenyl, alkynyl, aryl, or alkaryl.

~~18.~~ 19 The method of claim 17 wherein the solvent is dimethylacetamide.